

**COMBATING TERRORISM TECHNOLOGY SUPPORT OFFICE  
TECHNICAL SUPPORT WORKING GROUP (TSWG)  
DEPARTMENT OF HOMELAND SECURITY (DHS)**

**BROAD AGENCY ANNOUNCEMENT (BAA)  
DAAD05-03-T-0024**

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**Due Date for Receipt of Phase I Quad Charts**

**No Later Than June 13, 2003**

**CB - Chemical, Biological, Radiological and Nuclear Countermeasures**

**ED - Explosives Detection**

**IDD - Improvised Device Defeat**

**IP - Infrastructure Protection**

**IS - Investigative Support and Forensics**

**PP – Personnel Protection**

**PS – Physical Security**

**All submittals are due by 1600 – 4:00 p.m.  
Eastern Daylight Time (EDT) on the above date**

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**May 14, 2003**

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## **1. INTRODUCTION.**

This is the Combating Terrorism Technology Support Office (CTTSO) Technical Support Working Group (TSWG) Homeland Security Broad Agency Announcement (BAA), DAAD05-03-T-0024, issued under the provisions of paragraph 6.102(d)(2)(i) of the Federal Acquisition Regulation (FAR), to provide for the competitive selection of research proposals. Contracts based on responses to this BAA are considered to be the result of full and open competition and in full compliance with the provisions of Public Law (PL) 98-369, "The Competition in Contracting Act of 1984." Awards for submittals under this BAA are planned in late Fiscal Year (FY) 2003 and in FY 2004. Funds may not be available for all requirements under this BAA. No contract awards will be made until appropriated funds are available from which payment for contract purposes can be made.

### **1.1. Approach.**

A three-phased proposal selection process will be employed for this solicitation. Phase I will consist of the solicitation, receipt and evaluation of a one-page Summary Quad Chart (viewgraph) described later in this document. Phase II will consist of a solicitation of a White Paper (not to exceed 12 pages) from responders with qualifying Quad Chart evaluations. The White Paper shall include supporting information for data submitted in the summary Quad Chart and shall describe the problem/threat addressed, provide a more detailed proposed solution/approach, identify deliverables, describe work to be performed, describe the offeror's expertise to effect the proposed solution, and present estimated costs and schedule. Phase III will consist of a solicitation of a full proposal (not to exceed 50 pages) resulting from favorable White Paper evaluations. A final evaluation phase will be conducted upon receipt of full proposals.

### **1.2. HBCU/MI Set Aside.**

In an attempt to maximize participation of Small Businesses and Historically Black Colleges, Universities (HBCU) and other Minority Institutions (MI), a goal of 2.5% of total dollars awarded under the listed mission areas will be set-aside for HBCU/MI and a goal of 2.5% of total dollars awarded under the listed mission areas will be set-aside for small businesses for a total goal of 5%. If set-asides are not determined possible after examination of all proposals submitted under this BAA, goals for total dollars expended will no longer be subject to any set-aside restriction. The Government encourages nonprofit organizations, educational institutions, small businesses, small disadvantaged business concerns, and HBCU/MIs, as well as large businesses and Government laboratories to submit research proposals for consideration.

To ensure full consideration in these programs be sure to select the appropriate categories and include accurate and relevant information when registering in the BAA Information Delivery System (BIDS) described later in this document.

### **1.3. Period of Performance.**

Proposals that encompass a 12 to 18 month period of performance or less are anticipated for many of the requirements in this BAA. The Government anticipates that any contract resulting from this BAA may be funded on an incremental basis as provided by FAR 52.232-22. Limitation of Funds. Proposals shall contain a brief summary of the work contemplated for each period of performance (with associated cost data) so that the contract(s) may be negotiated for the entire program. Long-term proposals must include all tasking described in a phased approach. Also, the proposals must include a full cost proposal for the basic contract and any phases proposed. Any desired period for contract option exercise shall be negotiated at the time of contract award in accordance with the option clause set forth in the contract.

### **1.4. Technical Support.**

It is the intent of this office to use contractor support personnel in the review, evaluation, and administration of all submittals for this BAA. All individuals in this category that will have access to any proprietary data shall certify that they will not disclose any information pertaining to this solicitation including any submittal, the identity of any submitters or any other information relative to this BAA. Submission of information in

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response to this BAA constitutes permission to disclose information to certified evaluators under these conditions.

### **1.5. Instructions and Points of Contact.**

This BAA Package may be downloaded electronically in its entirety from [www.bids.tswg.gov](http://www.bids.tswg.gov) on the Home Page under Download BAAs. **Registration is not required** to download the BAA package; however, all unclassified proposals must be uploaded to BIDS and a registration is required to upload those submissions. BIDS registration requirements are discussed in section 3 of this document.

All contractual and technical questions regarding this BAA must be directed to the Contracting Officer, [DAAD05-03-T-0024Questions@tswg.gov](mailto:DAAD05-03-T-0024Questions@tswg.gov).

For help with BIDS, submit questions to BIDS administration at [bidshelp@tswg.gov](mailto:bidshelp@tswg.gov) or by accessing the HELP REQUEST link located at the bottom of the BIDS Home Page. Please be sure to include the reason for your request in the text block provided.

Offerors are encouraged to periodically review the BAA question and answer section on the web site, [www.bids.tswg.gov](http://www.bids.tswg.gov), located in the Frequently Asked Questions (FAQs) section of the main menu bar.

***NOTE: Persons submitting proposals are advised that only the Contracting Officer may obligate the Government to any agreement involving expenditure of Government funds.***

## 2. GENERAL INFORMATION.

### 2.1. Eligibility.

To be eligible for contract award, an offeror must meet certain minimum standards pertaining to financial solvency/resources, ability to comply with the performance schedule, prior record of performance, integrity, organization, experience, operational controls, technical skills, facilities, and equipment. See FAR 9.104. Additionally, all offerors MUST be registered in the Central Contractor Registration (CCR) database. See DFARS 204.7300. Website address for CCR database is <http://www.ccr.gov>.

### 2.2. Procurement Integrity, Standards of Conduct, Ethical Considerations.

Certain post-employment restrictions on former federal officers and employees may exist, including special Government employees (Section 207 of Title 18, United States Code). If a prospective offeror believes that a conflict of interest does exist, the situation should be raised to the issuing office's contracts representative before time and effort is expended in preparing a proposal.

### 2.3. Definitions.

#### **2.3.1. Small Business Concern.**

A concern that is independently owned and operated, is not dominant in the field of operation in which it is bidding on Government contracts, and meets the size standards in FAR 19.102.

#### **2.3.2. Small Disadvantaged Business Concern.**

"Small disadvantaged business concern" as used in FAR Part 19 (except for FAR Sections 52.212-3(c)(4) and 52.219-1(b)(2) for general statistical purposes and 52.212-3(c)(9)(ii), 52.219-22(b)(2), and 52.219-23(a) for joint ventures under the price evaluation adjustment for small disadvantaged business (SDB) concerns, means an offeror that represents, as part of its offer, that it is a small business under the size standard applicable to the acquisition; and either:

- (1) It has received certification as a small disadvantaged business concern consistent with 13 CFR part 124, subpart B; and
  - (i) No material change in disadvantaged ownership and control has occurred since its certification;
  - (ii) Where the concern is owned by one or more disadvantaged individuals, the net worth of each individual upon whom the certification is based does not exceed \$750,000 after taking into account the applicable exclusions set forth at 13 CFR 124.104(c)(2); and
  - (iii) It is identified, on the date of its representation, as a certified SDB concern in the database maintained by the Small Business Administration (SBA) (PRO-Net); or
- (2) For a prime contractor, it has submitted a completed application to the SBA or a private certifier to be certified as a small disadvantaged business concern in accordance with 13 CFR part 124, subpart B, and a decision on that application is pending, and that no material change in disadvantaged ownership and control has occurred since it submitted its application. In this case, a contractor must receive certification as an SDB by the SBA prior to contract award.

#### **2.3.3. North American Industry Classification System.**

Establishments that specialize in performing Professional, Scientific and Technical Activities for others are coded 541710 under the North American Industry Classification System (NAICS). The small business size standard for Classification 541710 is 500 employees.

### 2.4. Restrictive Marking on Proposals.

All proposals should clearly indicate content disclosure limitations. Submittals may be marked as "Proprietary" or words to that effect; however, markings such as "Company Confidential" or other phrases that may be confused with national security classifications shall be avoided.

**2.5. Submission Handling/Rights in Technical Data and Computer Software/Patent Rights - General.**

**2.5.1. Procurement Integrity.**

The Government intends to comply with FAR 3.104 in its treatment of information submitted in response to this BAA solicitation and marked with the individual or company's legend.

**2.5.2. Rights in Technical Data and Computer Software.**

Rights in technical data, computer software and software documentation provided in the proposal shall be treated in accordance with the DFARS 252.227-7016, entitled "Rights in Bid and Proposal Information." Rights in technical data, computer software and computer software documentation in the resultant contract shall be in accordance with DFARS 252.227-7013 (regarding technical data) and DFARS 252.227-7014 (regarding computer software and software documentation). Both clauses (DFARS 252.227-7013 and – 7014) shall be included in any non-commercial contract exceeding the simplified acquisition threshold. Other clauses to be included in the contract are: DFARS 252.227-7017, DFARS 252.227-7019, Validation of Asserted Restrictions - Computer Software; DFARS 252.227-7025, Limitations on the Use or Disclosure of Government-Furnished Information marked with Restrictive Legends; DFARS 252.227-7027, Deferred Ordering of Technical Data or Computer Software; DFARS 252.227-7030, Technical Data-Withholding of Payment; DFARS 252.227-7036, Declaration of Technical Data Conformity; and DFARS 252.227-7037, Validation of Restrictive Markings on Technical Data.

**2.5.3. Submission Information and FOIA.**

Records or data bearing a restrictive legend may be included in the proposal. The offeror is cautioned; however, that portions of the proposal may be subject to release under terms of the Freedom of Information Act (FOIA), 5 U.S.C. 552, as amended. In accordance with FOIA regulations, the offeror will be afforded the opportunity to comment on, or object to the release of proposal information.

**2.6. Report Requirements.**

The number and types of deliverable reports shall be specified in the contractual document. The reports shall be prepared and submitted in accordance with the procedures contained in the contract, based on the minimum reporting requirements, the contractor's proposal, and as mutually agreed upon before award. A Final Report that summarizes the project and associated tasks is required at the conclusion of each contract, notwithstanding the fact that the research may be continued under a follow-on contract. Monthly Reports documenting program and financial status are required. In addition, test plans, test and technical reports, technical data, specifications, computer programs or other data, as appropriate, should be specified based on the proposed efforts.

**2.7. Subcontracting.**

Pursuant to Section 8(d) of the Small Business Act (15 U.S.C. 637(d)), it is the policy of the Government to enable small business and small disadvantaged business concerns to be considered fairly as subcontractors to contractors performing work or rendering services as prime contractors or subcontractors under Government contracts, and to assure that prime contractors and subcontractors carry out this policy.

### 3. PROPOSAL PREPARATION.

This section provides information needed by the individual preparing the proposal for submission under this BAA.

#### **3.1. General Guidance.**

All submittals must strictly follow the instructions in this announcement and include the information specified to avoid delays in evaluation or disqualification of a submittal.

##### **3.1.1. Continuing Research Requirements.**

A proposal for continuation of a given research project will be considered on the same basis as proposals for new research agreements. The proposal must be submitted sufficiently in advance of the termination of the existing agreement so that if it is accepted, support may be continued without interruption.

##### **3.1.2. BAA Information Delivery System (BIDS).**

The BIDS, in operation at [www.bids.tswg.gov](http://www.bids.tswg.gov), will be used to provide public access to the BAA package and will be used to collect all **unclassified** submittals under this BAA. A BIDS registration is not necessary to download the BAA package. A Submitter Registration is required to respond to this BAA to upload submittal response data. The offeror must complete all mandatory fields on the submitter registration form in BIDS including a User Name that will be used for login and as part of document identifiers for submissions described later in this BAA package. Registration acceptance for submitters is automatic and will be transmitted by email indicating the User Name for login, but may take a few minutes to be recognized by BIDS. Questions regarding BIDS may be addressed via email to TSWG BAA Administrators at [bidshelp@tswg.gov](mailto:bidshelp@tswg.gov) or by accessing the HELP REQUEST at the bottom of the BIDS Home Page. For password resets, if you know your User Name and have a valid email address, the password can be reset automatically by selecting "Forgot My Password." A new password will be sent to the email address. Use the HELP REQUEST if you are having problems with your BIDS account. Registration account information can be updated by the user after login. The email address for a specific User Name in the BIDS registration serves as the notification point for all email correspondence to that "user" and should be the point of contact for the Government Contracting Officer.

##### **3.1.2.1. Format and Submittal Upload.**

All unclassified responses shall be uploaded to BIDS in the electronic format specified and each must include all information requested for each submittal type as described in this document. Each follow-on submittal shall not be uploaded until the previous submittal has been evaluated and an email request for the next submittal is received by the offeror from the contracting officer.

##### **3.1.2.2. Cover Page/Submittal Markings.**

The cover page of all submittals (or margin headers for all Quad Charts) shall be marked with the appropriate *BAA Announcement Number*, *Requirement Number* and *Title* as well as a *Document Identifier* described below. Additionally, for any classified material, the document must be clearly marked in accordance with appropriate security regulations.

##### **3.1.2.3. Document Identifier.**

The offeror shall insert a "Document Identifier" into the header (top margin area) of each submittal. The identifier shall be unique to any other submittal from the offeror and **MUST** be formatted with the targeted Mission Area or subgroup (i.e. CB or IS), the Requirement Number, the User Name and the submitter internal tracking number. The constructed document identifier is frequently used by the evaluation team to identify each submittal and to connect downloaded/printed documents with evaluation records posted into on-line collaboration software.

For example, Document Identifiers are formatted as follows:

**MissionArea-Requirement Number-UserName**-Submitter Internal Tracking Number.

Note: When actually uploading the document to a specific requirement in BIDS (on-line), the appropriate prefix (**underlined in the example**) is automatically generated by the system and attached to the submitter internal tracking number which is unique and created by the offeror. The document identifier should be inserted into the header of the uploaded document and **MUST** match the document identifier in BIDS.

The system enforces unique tracking numbers for each offeror and will not allow an upload of a submittal document if the submitter internal tracking number has already been used. For best tracking purposes, it is recommended that offeror use tracking numbers that will indicate the Phase to which the document was submitted. For example, {submitter internal tracking number}-01 would indicate that the document was submitted to Phase 1, and a suffix of -02 would indicate that the document was submitted to Phase 2, thereby making each number unique by virtue of the suffix. An alternative is to use -QC for a Quad Chart submittal, -WP for a White Paper and -FP as the final proposal, all unique because of the dash characters.

**3.1.3. BIDS Security and Submittal Changes.**

All data uploaded to BIDS is secure from public view or download. All submissions will be considered proprietary/source selection sensitive and protected accordingly. The documents may only be reviewed by the registrant, authorized Government representatives, and assigned evaluators. Changes to uploaded responses will be permitted up to the closing date and time. If the offeror wishes to submit a modified requirement response, the offeror must first delete the previous response and then upload a modified document. Changes after the requirement due date will not be permitted.

**3.1.4. Special Handling/Procedures for Classified Information.**

If a submittal contains classified information, the offeror must first obtain a submittal number through BIDS for tracking purposes and identify in the comments section why the submittal cannot be uploaded and submitted via the automated system. The BIDS tracking number must be clearly identified on the mailed submittal. Classified responses (up to SECRET) must be appropriately marked, sealed and mailed in accordance with classified material handling procedures. **All classified documents must be packaged and shipped in accordance with regulations and instructions pertaining to the level of classification.**

**For classified submittals, send an email to [security@tswg.gov](mailto:security@tswg.gov).** Mailing instructions will be provided at that time.

**Classified documents MUST be mailed and MUST be received by the applicable due date and time. Classification does not in any way eliminate the offeror's requirement to comply with all instructions in this BAA.**

**3.2. Phase I Submittals.**

**3.2.1. General.**

Offerors shall respond to Phase I of this BAA using a one-page Quad Chart in the format depicted in the Quad Chart samples downloadable from the BIDS web site "Reference Materials" option in the right hand panel. The Quad Chart must be received electronically through BIDS (unclassified) or received by mail (classified only) no later than **1600 (4:00 p.m.) EDT on June 13, 2003**. Upon request, the offeror may be required to provide access to pending patent applications.

**3.2.2. File Format and Content.**

The Quad Chart shall be prepared in color or black and white in Microsoft Word 97, Microsoft PowerPoint 95, or Adobe Acrobat (PDF – portable document format) electronic file format. The document must be print-capable, without password, using text font and graphic file formats that will cause the document to be **NO LARGER THAN 500KB IN FILE SIZE**. Graphic images inserted into the document should be in a file format (such as GIF/JPEG) that will minimize file size and support clear SVGA display and document printing (96

DPI recommended). The offeror shall upload the submittal via the BIDS response form for each requirement before the due date and time, and in accordance with instructions in sections 3.1 and 3.2. Prior to submittal, the offeror must ensure that the prepared chart includes the document identification header content as described in this document. The offeror should also ensure that the candidate proposal meets the needs of the requirement including cost, technical feasibility and other evaluation criteria as identified in this BAA.

**3.2.3. Notification to Offeror.**

Following review of the Quad Chart, the Government will notify the offeror when a submittal has been accepted or rejected. Notification of acceptance accompanied with a request to submit the Phase II requirement (White Paper) will be emailed to the offeror's contracting authority as entered in the BIDS registration and will indicate the new submittal due date and time. Notifications of rejection will likewise be emailed to the address provided by the offeror during BIDS registration. Debriefings for Quad Charts are not anticipated due to the nature of a BAA. It should generally be assumed that the reason a proposed solution was not considered for further review was that it did not fit the needs of the TSWG, that it was too costly, or that it failed to meet requirements as specified for technical evaluation.

**3.2.4. Status and Inquiries.**

Phase I is complete when all submissions have been accepted or rejected in accordance with paragraph 3.2.3 above. Telephonic inquiries concerning the status of Quad Charts will not be accepted.

**3.3. Phase II Submittals.**

**3.3.1. General.**

The second phase consists of a White Paper submitted with no more than 12 pages (including figures, charts, and tables, but excluding the cover page). All submittal pages must be formatted using single-side, double-spaced pages, font no smaller than 10 point, with 1-inch page margins (left/right/top/bottom). If the White Paper is longer than 12 pages, only the first 12 pages will be evaluated.

**3.3.2. File Format and Content.**

The White Paper shall be prepared in color or black and white in Microsoft Word 97 or Adobe Acrobat PDF electronic file format. The document must be print-capable and without password. All text and graphic content MUST NOT EXCEED 500KB IN TOTAL FILE SIZE. Graphic images inserted into the document should be in a file format (such as GIF/JPEG) that will minimize file size and support clear SVGA display and document printing (96 DPI recommended). The offeror shall upload the submittal via the BIDS response form (select "create next submission" from the accepted submittal) before the due date and time (i.e. 30 days from the date of the notification email), and in accordance with instructions in section 3.1 above. Prior to submittal, the offeror must ensure that the submittal includes the document identification header content as described in section 3.1 of this document. The offeror should also ensure that the submittal meets the needs of the requirement including cost, technical feasibility and other evaluation criteria as identified in this BAA.

**3.3.3. Technical Content.**

The White Paper shall describe the problem/threat addressed in the BAA Requirement and include:

**3.3.3.1.** Description of the proposed solution including underlying theory, a suggested concept of operations and potential users. Include a description of similar work performed, including what agency funded the effort.

**3.3.3.2.** Description of the proposed tasks and associated deliverables. Include definition of anticipated risks, planned mitigation efforts, work to be performed by the offeror, by other organizations, and any required Government furnished material (GFM) or information (GFI). Include clear descriptions of proposed phases, decision points and/or options. The offeror's proposed position on ownership of intellectual property shall also be described. Upon request, the offeror may be required to provide access to pending patent

applications.

**3.3.3.3.** Description of the planned methodology to transition to production and the suggested field support methodology, including:

**3.3.3.3.1.** A description of the offeror's capability and/or experience in doing this type of work. Include description of co-participants' capabilities and/or experience as well. State whether agreement has been reached with proposed co-participants.

**3.3.3.3.2.** A Master Project Schedule preferably in Gantt chart format. Schedule should show planned start and stop point of each phase and subordinate tasks, estimated delivery dates, and decision points. Period of performance will be assumed to be the last completion date shown unless otherwise stated.

**3.3.3.3.3.** A proposed, task-phased budgetary estimate. At a minimum, this estimate shall detail estimated labor hours and costs and anticipated material and other costs. Costs allocated to other organizations, e.g., Government testing, shall also be clearly shown. Estimated production unit costs should also be included.

**3.3.3.4.** Identification of Rights in Technical Data and Computer Software/Patent Rights. Technical data and computer software to be delivered with less than unlimited rights should be identified as prescribed by DFARS 252.227-7017 and DFARS 252.227-7028.

**3.3.3.5.** Technology Transition. The White Paper shall contain a brief discussion on the proposed concept for commercializing or transitioning the technology to production if the project is successful. If the offeror's proposal is based on technology that has a patent applied for, or issued, the offeror must provide the patent number or application serial number.

**3.3.4. Notification to Offeror.**

Following review of the White Paper, the Government will notify the offeror (normally within 90 days of the submittal close date) when a submittal has been accepted or rejected. Notification of acceptance accompanied with a request to submit the Phase III requirement (Proposal) will be emailed to the offeror's contracting authority as entered in the BIDS registration and will indicate the new submittal due date and time. Notifications of rejection will likewise be emailed to the address provided by the offeror during BIDS registration. Debriefings for White Papers are not anticipated due to the nature of the BAA. It should generally be assumed that the reason a White Paper was not considered for further review was that it did not fit the needs of the TSWG, that it was too costly, or that it failed to meet requirements as specified for technical evaluation.

**3.3.5. Status and Inquiries.**

Phase II is complete when all submissions have been accepted or rejected in accordance with paragraph 3.3.4 above. Telephonic inquiries concerning the status of White Paper submittals will not be accepted.

**3.4. Phase III Submittals.**

**3.4.1. General.**

The primary objective of the phased solicitation approach used in this BAA is to minimize cost and effort of prospective offerors. Accordingly, full proposals will only be requested for qualifying solutions that have a high probability of award. However, the Government reserves the right to cancel any Phase III solicitation prior to award. It is requested that proposals be divided into two "uploadable" documents/files. The first document should include all technical and contractual information. The second document shall include all cost information preferably in spreadsheet format. Each single file shall not exceed 500KB in total file size. In any case, technical descriptions shall not exceed 50 pages including cover page, figures, charts and tables (excluding any forms requested within this BAA package). All submittal pages must be formatted using single-sided, double-spaced pages, font no smaller than 10 point, with 1-inch page margins

(left/right/top/bottom). Each proposal submittal shall reference the BAA Number, the BAA Mission Area Title, the specific Requirement Number and Title as identified in Section 5 and include a Document Identifier as described in section 3.1 of this document. Classified proposals (up to SECRET) must be appropriately marked, sealed, and mailed in accordance with classified material handling procedures. Proposals received after the closing date will not be considered by the Government.

**3.4.2. File Format and Content.**

The proposal shall be prepared in color or black and white in Microsoft Word 97, Microsoft Excel 97 or Adobe Acrobat PDF electronic file format. The document must be print-capable and without password. Total text and graphic content in any upload section of the proposal MUST NOT EXCEED 500KB IN TOTAL FILE SIZE. Graphic images inserted into submittal documents should be in a file format (such as GIF/JPEG) that will minimize file size and support clear SVGA display and document printing (96 DPI recommended). All (unclassified) submittals shall be uploaded via the BIDS response upload form (select "create next submission" from the accepted submittal) before the due date and time specified in the email notice (i.e. 30 days from the date of the notification email) and in accordance with section 3.1 above.

**3.4.3. Technical.**

The technical portion of the proposal shall contain the following:

**3.4.3.1.** A title and an abstract that includes a concise statement of work and basic approaches to be used. This should be on a separate page and in a form suitable for release under the Freedom of Information Act, 5 U.S.C. 552, as amended. The statement of work should indicate the effort intended for the period of performance.

**3.4.3.2.** The technical portion shall include an Executive Summary, a technical approach, description of relevant prior work, a program plan including a statement of work, facilities and equipment descriptions, list of documentation and reports, and a management plan. All paragraphs containing proprietary information must be clearly marked.

**3.4.3.3.** The proposal shall include a section on technology transition planning that discusses the proposed approach for commercializing or transitioning the prototype technology to production. This section shall identify any existing intellectual property claims or intentions. The offeror shall specifically indicate if there is a patent pending (and the patent application number, if received) or a patent issued with the patent number(s). The offeror shall include a statement on licensing or venturing plans, as applicable, if the project is successful. The offeror shall discuss barriers to commercialization, such as anticipated regulatory issues (such as environmental, safety, health, and transportation), liability issues, interoperability, financing, etc. and planned steps to address these barriers. Also, if not covered in other sections, this section shall address interaction with potential users.

**3.4.3.4.** The names, brief biography, and a list of recent publications of the offeror's key personnel (including alternates, if desired) who will be involved in the research. Documentation of previous work or experience in the field of the offeror is especially important.

**3.4.3.5.** The type of support, if any, the offeror might request from the Government, such as facilities, equipment, or materials.

**3.4.3.6.** The names of other federal, state, or local agencies or other parties receiving the proposal and/or funding the proposed effort. If none, so state.

**3.4.3.7.** A statement regarding possible impact, if any, of the proposal's effect on the environment. If none, so state.

**3.4.3.8.** A brief description of the offeror's organization.

**3.4.3.9.** The offeror shall indicate the total scope of work to be performed for this effort.

**3.4.4. Cost.**

The cost information of the proposal shall contain the following:

**3.4.4.1.** A cost estimate that is sufficiently detailed by element of cost for meaningful evaluation. Cost breakdown shall include materials, direct labor, indirect costs, and other direct costs such as special test equipment or travel. Offerors shall provide exhibits as necessary to substantiate the cost elements.

**3.4.4.2.** A cost-element breakdown shall be attached for each proposed line item and must reflect all specific requirements. Supporting breakdowns must be furnished for each cost element, consistent with the offeror's cost accounting system. When more than one contract line item is proposed, summary total amounts covering all line items must be furnished for each cost element. If agreement has been reached with Government representatives on the use of forward pricing rates/factors, identify the agreement. Depending on the offeror's system, breakdowns shall be provided for the following basic elements of cost, as applicable:

**3.4.4.2.1. Materials:** Provide a consolidated price summary of individual material quantities included in the various tasks, orders, or contract line items being proposed and the basis for pricing (vendor quotes, invoice prices, etc.). Include new materials, parts, components, assemblies, and services to be produced or performed by others. For all items proposed, identify the item and show the source, quantity, and price.

**3.4.4.2.2. Competitive Methods:** For those acquisitions (e.g., subcontract, purchase orders, material orders) over \$100,000 priced on a competitive basis, also provide data showing degree of competition and the basis for establishing the source and reasonableness of price. For inter-organizational transfers priced at other than cost of the comparable competitive commercial work of the division, subsidiary, or affiliate of the contractor; explain the pricing method (See FAR 31.205-26(e)).

**3.4.4.2.3. Established Catalog or Market Prices/Prices Set By Law or Regulation:** When an exemption from the requirement to submit cost or pricing data is claimed, whether the item was produced by others or by the offeror, provide justification for the exemption.

**3.4.4.2.4. Noncompetitive Methods:** For those acquisitions (e.g., subcontract, purchase orders, material orders) over \$550,000 priced on a noncompetitive basis, also provide data showing the basis for establishing source and reasonableness of price. For standard commercial items fabricated by the offeror that are generally stocked in inventory, provide a separate cost breakdown if price is based on cost. For inter-organizational transfers priced at cost, provide a separate breakdown of cost by elements.

**3.4.4.2.5. Direct Labor:** Provide a list of participants, not necessarily by name, showing a time phased (e.g., monthly, quarterly) breakdown of labor hours, rates, and cost by appropriate category, and furnish basis for estimates.

**3.4.4.2.6. Indirect Costs:** Indicate how offeror has computed and applied offeror's indirect costs. Indicate the rates used and provide an appropriate explanation.

**3.4.4.2.7. Other Costs:** List all other costs not otherwise included in the categories described above (e.g., special tooling, travel, computer and consultant services, preservation, packaging and packing, spoilage and rework) and provide basis for pricing.

**3.4.4.2.8. Royalties:** If more than \$250 provide the following information on a separate page for each separate royalty or license fee:

- Name And Address of Licensor
- Date of the License Agreement

- Patent numbers, Patent Application Serial Numbers, or other basis on which the royalty is payable
- Brief description (including any part or model numbers of each contract item or component on which the royalty is payable)
- Percentage or dollar rate of royalty per unit
- Unit price of contract item
- Number of units
- Total dollar amount of royalties

Note: A copy of the current license agreement and identification of applicable claims of specific patents may be specifically requested by the contracting officer. (See FAR 27.204 and 31.205.37.)

**3.4.4.2.9. Facilities Capital Cost of Money:** When the offeror elects to claim facilities capital cost of money as an allowable cost, the offeror must submit Form CASB-CMF and show the calculation of the proposed amount. See FAR 31.205-10.

**3.4.4.2.10. FEE:** Include the fee, if any, proposed for this effort.

**3.4.5. Contractual.**

The contractual portion of the proposal should contain the following:

**3.4.5.1.** Identify the offeror's contracting point of contact including name, telephone number, email address, facsimile number, mailing address and other contact information.

**3.4.5.2.** The type of contract preferred. Generally, the contract type most used is Cost Plus Fixed Fee (CPFF).

**3.4.5.3.** Proposed duration of effort, basic contract, and any options.

**3.4.5.4.** The identity of any members of the organization with potential conflicts of interest. Possible conflicts of interest include any people with prior federal employment including employment of the principal investigator as a special Government employee (duties, agency with whom employed, dates of employment) within two years from the date of proposal submission. If none, so state.

**3.4.5.5.** If the offeror is proposing to perform research in a classified area, indicate the level of classification of the research and the level of clearance of the potential principal investigator and all other proposed personnel. Also indicate the Government agency that issued the clearances.

**3.4.5.6.** A list of property required to perform the proposed research, separating items to be acquired with contract funds and those to be furnished by the Government. When possible, the description or title and estimated or known unit and total costs of each item should be shown (i.e., manufacturer, catalog price, or previous purchase price). When such information on individual items is not available, the items should be grouped by class and estimated values indicated. In addition, the offeror must include a statement as to why it is necessary to acquire the property with contract funds, and if applicable, express in writing his unwillingness or financial inability to acquire the items with his own resources. Please note that the FAR generally prohibits providing an industrial contractor with facilities (including plant equipment and real property) with a unit acquisition cost of less than \$10,000.

**3.4.5.7.** If the total amount of the proposal exceeds \$500,000 and the offeror is not a small business, the offeror shall submit a subcontracting plan for small business and small socially and economically disadvantaged business concerns. A mutually agreeable plan will be included in and made a part of the resultant contract. The contract cannot be executed unless the contracting officer determines that the plan provides the maximum practicable opportunity for small business and small disadvantaged business concerns to participate in the performance of the contract.

**3.4.6. Notification to Offerors.**

Phase III is complete when the Government concludes technical evaluations and transitions to formal negotiations. Notification of acceptance or rejection of a Phase III Proposal will be sent via email to the offeror's principal contact as entered in the BIDS registration. A formal debriefing may be requested by the offeror if the Government does not accept the Phase III proposal. Telephonic inquiries concerning the status of Phase III prior to official notification will not be accepted.

## **4. PROPOSAL EVALUATION.**

### **4.1. Objective.**

The TSWG conducts rapid prototype development focused on critical multi-agency and future threat counter/anti-terrorism requirements. The primary TSWG mission is to conduct the National Interagency Research and Development (R&D) Program for combating terrorism through rapid research, development, and prototyping. This agency's program objectives are to provide an interagency forum to coordinate R&D requirements for combating terrorism, to sponsor R&D not otherwise being addressed by individual agencies, and to promote information transfer among the participating agencies.

### **4.2. Evaluation Criteria.**

The criteria to be used to evaluate and select proposals for TSWG projects are described in the following paragraphs. Each proposal will be evaluated on the merit and relevance of the specific proposal as it relates to the TSWG program rather than against other proposals for research in the same general area.

#### **4.2.1. Basic Requirement.**

The proposed solution meets the letter and intent of the stated requirement and all elements within the proposal exhibit a comprehensive understanding of the problem and the requirements of intended end users. The proposed solution meets multiple TSWG user (either U.S. Government or commercial) needs and is conclusive with full compliance and justification of each required element in the solicitation.

#### **4.2.2. Technical Performance.**

The proposed technical approach is feasible, achievable, complete and supported by a proposed technical team that has the expertise and experience to accomplish the proposed tasks. Task descriptions and associated technical elements provided are complete and in a logical sequence with all proposed deliverables clearly defined such that a final product that achieves the requirement can be expected as a result in the award. The proposal identifies all technical risks and planned mitigation efforts are clearly defined and feasible. The roles of the prime and other participants required are clearly distinguished and pre-coordination with all participants (including Government facilities) fully documented. The requirement for and the anticipated use or integration of GFM including all equipment, facilities, information, etc. is fully described including dates when such GFM will be required. Intellectual property ownership and the planned transition to production are adequately addressed, including a support concept for product described. Similar efforts completed by the offeror in this area are fully described including identification of other Government sponsors.

#### **4.2.3. Contractor Past Performance.**

The offeror's past performance in similar efforts clearly demonstrates an ability to deliver products that meet the proposed technical performance requirements within the proposed budget and schedule. The proposed project team has the expertise to manage the cost and schedule.

#### **4.2.4. Schedule.**

The proposed schedule is complete and achievable. The proposal indicates that the offeror has fully analyzed the project's critical path and has addressed the resulting schedule risks.

#### **4.2.5. Cost.**

The proposed costs are both reasonable for the work proposed and affordable. The proposal documents all anticipated costs including those of associate, participating organizations. The proposal demonstrates that the offeror has fully analyzed budget requirements and addressed resulting cost risks. All cost-sharing and leveraging opportunities have been explored and identified. Other sponsors who have funded or are funding this offeror for the same or similar efforts are identified.

## 5. TECHNOLOGY DEVELOPMENT REQUIREMENT TARGETS AND OBJECTIVES.

TSWG is interested in soliciting proposals in the following areas combating terrorism. The intent of this BAA is to identify technologies and approaches that provide near-, mid-, and long-term solutions that enhance the capabilities of the US Government to combat or mitigate terrorism. The level of detail provided for each specific mission area requirement or the order in which requirements appear is not intended to convey any information regarding relative priority. As a reminder, every submittal must have a document identifier that includes the mission area designator (i.e. CB, ED, IDD, IP, IS, PP or PS), the requirement number and a submitter tracking number as described in section 3 of this document.

### **5.1. Chemical, Biological, Radiological and Nuclear Countermeasures (CB) Mission Area**

The Chemical, Biological, Radiological and Nuclear Countermeasures (CBRNC) Subgroup is responsible for identifying and developing user requirements and associated technologies and equipment to support Chemical, Biological, Radiological and Nuclear Countermeasures. This includes development of personal protective equipment and systems to detect, assess, mitigate, and decontaminate improvised chemical, biological, radiological and nuclear countermeasures devices in non-battlefield scenarios. The types of systems are categorized into four areas: Detection/Identification, Mitigation/Decontamination, Protection, and Information Products and Training.

#### **R000-CB Unspecified Requirement - CBRNC**

New (or improved) technologies or emerging technological capabilities pertaining to the field of non-battle field Chemical, Biological, Radiological and Nuclear Countermeasures that may be of interest to the TSWG, not specifically requested in this BAA. Specific focus areas of interest are:

Detection - Improve the sampling, detection, and forensic analysis of food- and water-borne CB agents, toxic industrial chemicals, low-concentration chemical warfare agents and biological warfare agents.

Protection - Improve the operating performance and decrease the cost of personnel and building protection equipment. Equipment that is affordable and will protect building occupants from attack, and expanding protection against toxic industrial chemicals.

Decontamination - Develop technologies and protocols for personnel, facilities and equipment decontamination. Systems will be low-cost, environmentally-benign, safe, and effective at decontaminating biological and chemical warfare agents and persistent toxic industrial chemicals.

Information Resources - Develop shared information management tools that provide a common "picture of the incident" and facilitate the efficient integration of diverse emergency and consequence management elements from federal, state and local agencies.

#### **R1000 Low-Cost Personal Decontamination System (Chemical)**

Develop an individual chemical decontamination kit for use by victims. The kit will provide an expedient measure as a first step in the self-decon process. The system shall quickly remove or neutralize military chemical agents and persistent toxic industrial chemicals. The kit could be handed out to ambulatory and coherent victims for use with a minimum of instruction. It must be easy to open without tools.

Instructions for use on the external portions of the packet shall be graphical supplemented with large text. This decontaminating wipe should contain a "mitt" or "sponge like" applicator that would not exacerbate the spread of contamination or increase its penetration through the skin. The decontaminant must be safe to use on skin, wounds and mucus membranes. A dye or fluorescent marker will be included to identify the treated areas of the skin. This marker and any decontamination agent residual must be soluble in soap and water and easy to remove by subsequent personal decontamination steps. Selection for effectiveness of the proposed solution will be given to those that address fast-acting agents and chemicals causing fatalities. The shelf-life/storage shall be at least two years under ambient storage conditions (50° – 95°F) and should not be adversely affected by short term exposure to higher or lower temperature, which would be found in a warehouse without air conditioning or in an emergency response vehicle. Cost goals are less than \$10 per package.

**R1001 Statistical Design Tool for Sampling Contaminated Buildings**

Develop a software application that assists in the design of statistically-valid surface sampling regimes for determining the extent of contamination in a building following a biological or chemical agent terrorist attack. The application will be used to guide the sample collection and decontamination process. The tool will determine the sampling density needed and how many air and surface samples are required for pre- and post-decontamination processes. The tool will take inputs for assay type, minimum detectable level, the detection variance, the maximum acceptable level of contamination and the level of confidence required. The output of the tool is a sampling plan for the contaminated building that allows the user to state with the required statistical confidence that the level of contamination at various locations is less than the threshold value. Additional input parameters may include type of contaminant, how the contaminant was released, sample collection process and where in the building the contaminant was released. Building design (CAD or photographs) and operation factors (such as heating, ventilating, and air conditioning system operation, and room-to-room air flows) may also be used in guiding selection of sample location to determine extent of contamination.

**R1002 Low-Cost Personal Decontamination System (Biological)**

Develop an individual biological decontamination kit for use by victims. The kit will provide an expedient measure as a first step in the individual self-decon process. The system shall include a simple mask to minimize inhalation and a capability to quickly remove or neutralize biological agent aerosol materials on people's skin, hair and clothing. The system should also immobilize agent materials, which cannot be neutralized to prevent re-aerosolization for subsequent removal by deliberate fixed decontamination. The kit could be handed out to ambulatory and coherent victims with a minimum of instruction. It must be easy to open without tools. Instructions for use on the external portions of the packet shall be graphical supplemented with large text. This decontaminating wipe should contain a "mitt" or "sponge like" applicator that would not exacerbate the spread of contamination or increase its penetration through the skin. The decontaminant must be safe to use on skin, wounds and mucus membranes. A dye or fluorescent marker will be included to identify the treated areas of the skin. This marker and any decontamination agent residual must be soluble in soap and water for easy removal by subsequent personal decontamination steps. Selection for effectiveness of the proposed solution will be given to those address biological agents that survive for extended periods of time in the environment, e.g. bacterial spores. The shelf-life/storage shall be at least two years under ambient storage conditions (50o – 95oF) and should not be adversely affected by short term exposure to higher or lower temperature, which would be found in a warehouse without air conditioning or in an emergency response vehicle. Cost goals are less than \$10 per package.

**R1014 CBR Mitigation in Mass Transit Terminals**

Public transport terminals (e.g. transit, rail, subway, airport, and bus) require a capability to mitigate the effects of a chemical and biological agent release. These mitigating techniques must reduce the impact of the chemical and biological agent released into the public facility and facilitate follow-on decontamination and restoration of service. The decontaminant selected shall have the following specific capabilities: low cost, low toxicity, simple to use, long shelf life, portable, capable of being produced in large quantities, and be active on multiple targets. The mitigating techniques should be easy to use for trained personnel wearing protective equipment. Procedures and materials must meet Federal/State environmental, health and safety standards (OSHA, EPA, FDA). The mitigating approach should be capable of functioning quickly [90% reduction in threat in less than five minutes (required); one minute (desired)] against the Category A and B biological agents (including Bacillus anthracis spores) and threat chemical agents (GA, GB, GD, and VX), blood agents (AC and CK), lung damaging agents (CG, halogens, phosgene). The method shall describe the mode of action against the chemical and biological threat agent, expected by-products, measure the effectiveness across a range of environmental conditions and surfaces, and assess the employment of the delivery system in postulated threat scenarios for the public transport terminal application. Cost shall be less than \$1,000,000 for the prototype and installation and annual maintenance/consumables shall be less than \$10,000 per year. Training shall require less than one (8) hour session.

**R1015 Low Cost Shelter in Place Training and Tools for Public Buildings**

Develop and test a low cost shelter in place kit for use in public buildings, such as schools, libraries and government offices. The kit will be used to reduce the inhalation and percutaneous risk to occupants of the building during a chemical or biological attack. The shelter in place tools should include training resources (video, CD or booklet) to assist the facility manager in identifying the best locations in the large public building and inexpensive means for mitigating the risk of exposure. Easy to use and cost-effective means for enhancing the survivability of individuals, especially expedient means for reducing risk of respiratory exposure, are required with simple instructions for personnel to employ. Procedures and materials must be capable of being deployed quickly (less than five minutes desired). The analysis shall include an assessment of the effectiveness across a range of environmental conditions and assess the employment of the kit in postulated threat scenarios. The goal is a kit that is simple to use and low in cost. The priority agents of concern are nerve agents, blister agents, toxic industrial chemicals and aerosolized bacteria.

**R1021 Advanced Distributed Learning (ADL) Delivery Architecture and Services**

Design and develop an advanced distributed learning (ADL) delivery architecture and its associated services to provide Homeland Security education and training any time and anywhere. The delivery architecture shall be based on a collection of distributed services with Web interfaces and an open component communications model that is consistent with emerging computing and communications infrastructures. The architecture must support content object reuse and establish models and procedures such that education and training materials produced by any agency will be available for reuse across the community. It must also integrate with other Internet-based ADL delivery systems, must support the education and training delivery requirements of individual Homeland Security elements, and must be scalable to interagency and civilian emergency response elements. The architecture must also include intelligent agent and intelligent tutoring applications to enhance the quality of education and training and reduce training program manager, instructor, and trainee time and effort. The delivery services must focus on users, instructors, managers, and developers and include, but are not limited to, course delivery and operations, content management, workspace/repository, registration, calendar and event management, directories, digital libraries, search, collaboration, commerce, career management, and authentication. The approach should focus on ubiquitous and distributed computing so as to provide the basis for commercial technology and learning technology standards needed to provide any time/anywhere learning. It should explore emerging technologies for training delivery and create prototype learning technology systems, services, and standards matched to evolving learning, computing, and network technologies.

**R1022 Rapid Education for Medical Professionals**

Develop network technologies that enable appropriate federal, state and county health agencies (CDC, DHS, and others) to multicast across diverse media relevant educational modules through existing health community channels in the public and private sector. A number of organizations could serve as channels for alerting and educating medical professionals about these threats, including professional medical societies, hospitals, managed healthcare organizations, community service networks and thereby extend the federal government's existing capabilities. The network will allow federal government health agencies to broadcast an emergency message with links to supporting training materials. The network will also allow federal government health agencies to dynamically deliver educational resources through existing channels to health care communities without requiring these communities to download course materials or install a learning management system. Alerts and educational broadcasts must occur in an automated and rapid fashion. The administrative tasks required for configuring a system to accept broadcast messages and educational content must be minimal. The network must allow medical professionals to receive appropriate professional continuing education credit for completing educational modules. The network must verify the authenticity of broadcast senders and protect the integrity of the data in transit. Content for the educational models should be based upon the Advanced Distributed Learning Initiative's SCORM (Shareable Content Object Reference Model) with appropriate customizations for the needs of medical learners. Technical approaches must be based on open standards such as XML and Web services; implementation standards must be agreed upon by the key stakeholders.

**R1027 Chemical Agent Risk Assessment Tool**

Develop an emergency response tool to provide scientific and consensus-based risk assessment information and algorithms for determining the individual protection provided by respirators and other personal protective equipment while operating in an environment contaminated by chemical warfare agents chemical and toxic industrial chemicals. The tool shall consolidate information from Government and vendor sources into one "user friendly" emergency response tool. This software application will provide a quick and efficient way to access appropriate hazard concentration levels (IDLH, AEL, ERPG) for specific chemicals, identify suitable protective equipment, and assess stay times versus risk to personnel. Odor thresholds; initial symptoms of exposure and break through times for filters, suits, gloves and boots should be incorporated.

**R1030 Next Generation Structural Fire Fighting Protective Ensemble**

Develop, design and deliver a prototype next generation fire fighter turnout gear for use by military and civilian fire fighters. The garment will provide the same or improved heat, flame, hot gas and water protection as the current generation of garments (NFPA 1971 Standard on Protective Ensemble For Structural Fire Fighting ([www.nfpa.org](http://www.nfpa.org))) while also providing improved protection against inadvertent exposure to liquid, vapor and aerosolized hazardous chemicals--including TICs, TIMs and the military warfare agents. Improved protection against biological and radiological aerosol hazards is also desired. The garment will be at least as flexible and easy to don as the current generation garments. The garment will not exceed the weight of the current generation garment by more than 10% and reduction in weight without compromising protection is desired. The garment will afford the same durability--resistance to wear and tear, and reduced heat stress risk. The garment's service life must be equivalent to the existing generation of turnout gear in all environments and require a similar level of maintenance and cleaning. Ideally, the garment would afford vapor and splash protection equivalent to fully encapsulating protective ensembles, when coupled with appropriate chemical resistant gloves, boots, hard hat, hood and SCBA (NFPA 1994 Class 1/Level A). The garment must be affordable by State and local agencies. The final cost per suit shall be estimated and is an important criterion for evaluating potential solutions.

**R1031 Standoff Maritime Radiological Gamma/Neutron Detector**

Design, develop and demonstrate a device that will detect and alert personnel (required) to the presence of undeclared radiological or special nuclear material (SNM) and localize the suspect material (strongly desired) on ships and barges while transiting waterway locks. Localization of the source on the ship will be used to guide subsequent inspection by security personnel. The device must be able to detect and localize gamma and neutron emissions from a slowly moving (essentially stationary) source within the confines of the lock (up to a 766'x 40'x 30'). Detection and confirmation must be completed in 20 minutes (desired)/30 minutes (required). It must reliably operate over a wide environmental range to include: temperature (0°C – 40°C); humidity (10 - 100% RH); and rain. It must not be damaged by snow or ice or exposure to temperatures as low as – 20°C. The detector must meet requirements of draft ANSI Standard N42.33. It must have a false negative rate as low as possible with an acceptable initial false positive rate < 1%. Operator interface shall be simple to use with wireless transmission of data to a central analytical facility.

**R1032 Transportable Emergency Water Treatment and Distribution**

Design, develop and demonstrate modular, transportable emergency water treatment units to respond to suspected contamination of water supply systems providing an interim source of safe drinking water for the affected community. The system shall effectively and efficiently remove silt, clay, dirt, sand, mud, waterborne pathogens (including biological warfare agents, bacteria, viruses, and protozoan cysts), hazardous chemicals (including chemical warfare agents), salts, and pesticides. The system should incorporate standard treatment methods to ensure the safe storage and delivery of the water to the users through scalable above ground temporary distribution pumping and piping systems. Portable water pumping systems to quickly provide raw, untreated source water for emergency purposes (e.g., fire suppression) or to

move treated water in an impaired water distribution system are also required. These portable water-pumping systems need to be compatible with the water treatment units. The units shall have the capability of being stored with minimal maintenance for years and dispatched to the affected community quickly by surface transport (required) or air (desired).

**R1063 Real-Time Radioisotope Identification and Reporting**

Develop a real-time radiation sensor that identifies hazardous radioactive material and nuclear weapons material (draft ANSI N42-34) packaged in a variety of sizes of boxes and cargo containers. The system shall be capable of transmitting high resolution spectra from remote locations. The low-cost (less than 35K each), simple-to-use device shall provide spectral analysis and isotope identification. It should be battery powered, hand held and have the ability to operate in close proximity to the source for identification of radioisotopes. It shall be able to identify target agents that are shielded by 6" of borated polyethylene, 1/2" lead, or 1" of iron. The gamma detector shall have a minimum intrinsic efficiency of 30% of a standard 3" x 3", cylindrical, NaI (TI) detector and the neutron detector shall have a minimum intrinsic efficiency for thermal neutrons equal to a 6inch long, 1inch diameter He-3 tube. The system shall be usable nation wide (required)/world-wide (desired) without modification.

**R1071 Radiation Pager with Integrated Dosimetry, GPS, and 2-way Communications**

Develop a radiation pager system with integrated GPS and communication capability for mobile/automated interdiction and consequence management applications. The system must provide automated reporting via commercial wireless/landline links of the location and radiation levels for detections above an adjustable threshold. The detections shall be displayed on a GIS for use in a local, regional or national command center enabling a common operational picture in the event of a radiological or nuclear incident. The radiation detector shall be capable of detecting gamma radiation and meet the draft ANSI N42.32 standard. Neutron radiation detection and reporting is optional. The pager shall also provide conventional individual, two-way text communication. The size goal is a device no more than 50% larger by volume/weight than current, commercial 2way pagers. Users include front-line border security, law enforcement officers and other public safety personnel.

**R1072 Efficient Detection of High-Z materials in Cargo**

An advanced technique is needed to aid in the detection of high-Z materials that might be special nuclear materials or material used as a gamma radiation shield in cargo. The automated detection of these materials would provide a key operator aid in interdicting small volumes of materials. The system must be able to automatically provide the operator with visual indications of the presence of materials with Z higher than Iron. The system need not provide further discrimination but such discrimination could potentially be useful. This system would provide capability against volumes as small as 100 cm<sup>3</sup> in railcars, trucks, air cargo containers to shipping containers with probabilities of detection exceeding 99% and false or nuisance alarm rates below 1%. The system must comply with current environmental, health and occupational safety regulations. The system must be operable in a wide range of temperature, humidity, wind, salt, fog and dust environments. Spatial resolution and scan rate must ultimately meet or exceed currently available radiography techniques used for inspection of shipping containers. Proposed advanced prototype solutions must provide a proof-of-concept demonstration in one or more application environments (screening of commercial road/rail vehicles at land borders, screening of shipping containers at sea ports, or screening of air cargo). Enabling technology proposals addressing phenomenology and system performance modeling, advances in sources and detection equipment, signal processing and visualization will also be considered.

**R1073 Facility Toxic Industrial Chemical Warning Monitor**

Develop a sensor for Toxic Industrial Chemicals (TICs) that can be installed in the HVAC system of buildings. The detector will warn personnel of airborne TICs before adverse acute health effects occur. For acute level concentrations this may require detection times on the order of 1 minute. Chemical classes to include amines (ammonia, dimethylamine), aldehydes (acetaldehyde, crotonaldehyde, formaldehyde), hydrocarbons (butanes, propane, butadiene, ethane, propylene), halogens (chlorine, fluorine, bromine)

chlorocarbons (ethyl chloride, vinyl chloride, methyl chloride, tetrachloroethane), epoxides (ethylene oxide, propylene oxide), arsinicals (arsine, phenyldichloroarsine), sulfur dioxide, phosgene, and cyanides (methylisocyanate, hydrogen cyanide, cyanogen chloride). Preference will be given to detection systems which detect the broadest range of agents. In production, the device shall cost less than \$2500 and require minimal maintenance (less than \$100/year). Because the device shall be installed to monitor for the presence of toxic industrial chemicals within the building HVAC system, it must be able to operate within a high air flow environment and not interfere with building operations. False negative rates of <1% (desired) <5% (required) and false positive rates approaching 0.001% are required. Devices must be capable of networking and data formatted for transmission to building computer control system and interfaced with the building alarm.

**R1074 Biological Aerosol Threat Warning Detector**

Develop a small and inexpensive device that rapidly (order of 1 minute) will indicate the presence of elevated airborne concentrations of microbiological material in the air. The sensor shall be designed to alarm (visual and audible) and permit space isolation and evacuation of the personnel. In production, the detector shall be similar in size and cost of a conventional smoke detector (<9"L x 9"H x 1"D). The device shall be easily installed on flat surfaces by unskilled labor and have annual maintenance costs less than \$10. The device shall be able to discriminate respirable particles (wet or dry) containing bacteria, viruses and toxins from pollen and common inorganic aerosol components. Because these sensors will be used in conjunction with other more sensitive/selective detectors, the system shall be able to detect changes of 10,000 particles per liter of air, though a sensitivity of 1,000 agent containing particles per liter of air would be desirable, if it can be achieved without a significant increase in false alarms. False negative rates of <1% (desired) <5% (required) and false positive rates approaching 0.001% are required.

**R1075 Facility Biological Toxin Aerosol Warning Monitor**

Develop a sensor for detection of airborne biological toxins that rapidly warns building occupants prior to the inhalation of a dose which would cause irreversible adverse health effects. This may require detection times of less than 1 minute. The system will detect Clostridium botulinum toxin, Staphylococcus enterotoxin B, ricin, mycotoxins (trichothecene, aflatoxin), and saxitoxin. The cost goal is less than \$2500 and the system shall require minimal maintenance (less than \$100/year). Because the device shall be installed to monitor for the presence of the toxins within the building HVAC system, it must be able to operate within a high air flow environment and not interfere with building operations. False negative rates of <1% (desired) <5% (required) and false positive rates approaching 0.001% are required. Devices must be capable of networking and data formatted for transmission to building computer control system and interfaced with the building alarm system.

**R1076 Portable Biological Toxin Warning Sensor**

A portable (hand-held), autonomous (rechargeable battery with continuous 24 hr operation) instrument shall be developed to alert the user to the presence of biological toxins in air, water, and swabs from various surfaces. The goal for speed of detection is less than five minutes with sensitivity to alarm in time to prevent inhalation of a dose which would cause irreversible adverse human health effects. The intended users include emergency responders and hospital triage personnel. The device shall require minimal technical expertise for operation and detect and identify multiple toxins including Clostridium botulinum toxin, Staphylococcus enterotoxin B, ricin, mycotoxins (trichothecene, aflatoxin), and saxitoxin with a false positive <1% and false negative rate of <0.01%.

**R1077 Characterization of Biological Backgrounds in Facilities**

Characterize the aerosol and surface bacterial and viral biological load (with a priority on threat agent species and their near neighbors) over time, season, weather, population loading, and geography in key facilities. Information gleaned from this analysis will be used as baseline information in bio-surveillance and restoration activities. Priority threat agents include Bacillus anthracis, Francisella tularensis, Brucella spp., Yersinia pestis, and other bacterial and viral category A and B listed agents. Microbial characterization of

air and surfaces shall be listed in an electronically searchable database and includes total bioaerosol loading, identification to the species level, source, quantitative assessment ((e.g. agent containing particles per liter of air, (colony forming units) CFU/cm<sup>2</sup>, CFU/m<sup>3</sup> air)). Proposal should address the minimum sampling effort needed to characterize the facility and marginal value/cost of more intensive sampling. GFE assays/reagents needed shall be identified. The initial effort shall characterize up to eight airports. Future facilities may include federal courthouses, stadiums and shopping malls.

**R1078 Large-Scale Restoration of Biologically Contaminated Urban Areas**

Develop science- and consensus-based protocols to restore large scale (multiple city blocks) urban areas to safe levels for unrestricted reoccupation and use after a bioterrorism attack. The protocols shall address both man-made and natural exterior areas and building interiors, especially those that may be limiting factors in reoccupation. Priority threat agents include *Bacillus anthracis*, *Francisella tularensis*, *Brucella* spp., *Yersinia pestis*, and other bacterial, viral and toxin CDC Category A and B listed agents. The study shall address natural influences on the decay of agent viability/stability, effectiveness of decontamination protocols, and assess risk tradeoffs between maximum acceptable Category A and B threat agent levels in soil, water, air, and on surfaces and decon/sampling/assay requirements.

**R1079 Rapid Semi-Empirical Tool for Estimating Air Flow in Facilities**

Develop a software tool that accurately (95% confidence) and rapidly (1 day) provides air flows and residence times for a facility. Starting with building design information, which may include CAD files for newer buildings, the tool will identify a minimal set of simple measurements (flow rates, pressure drops, leakage tests) to iteratively refine and confirm the building air flow model. All tests recommended shall comply with applicable environmental, health and safety regulations. The airflow predictions will be used to guide physical security procedure and sensor employment, optimize sensor placement, predict the spread of biological and/or chemical contamination from a given source release, and to develop hazard management/response practices for chemical and biological events. Testing, data input and computer hardware costs shall be minimized.

**R1080 Direct Detection Assay for Botulinum Toxin**

A rapid detection assay for direct detection of Botulinum toxin (caused by *Clostridium botulinum*) shall be developed for routine use across the full range of sample matrices in clinical, food safety and environmental testing laboratories. The assay shall have sensitivity and specificity comparable to current mouse bioassays. The sample preparation time and costs shall be minimized. The goal for completing the assay analysis is less than 10 minutes. The priority toxin types are Type A, Type E and Type B.

**R1081 Distributed Real-time Monitoring of Decontamination Conditions**

Develop a distributed sensor system for real-time monitoring of critical physical parameters (temperature, humidity, light intensity) and chemical (decontamination reagent, oxygen, explosive vapor) concentrations necessary for effective gas phase decontamination of a large multi-story building. The system shall report values at least once a minute to a central monitoring system, identify trends and recommend corrective actions throughout the decon process. Sensor suite and installation costs shall be minimized. Sensors should be reusable and must operate unattended for at least 24 hours.

**R1090 Expedient Mitigation of a Radiological Release**

Develop and test materials, equipment and procedures to rapidly and efficiently minimize the spread of radioactive particulates resulting from the activation of a radiological dispersion device. The technology should be simple to use, environmentally benign, pose minimal health risks and able to quickly fix the surface contaminants in place preventing their spread and facilitating subsequent restoration decontamination efforts. Surfaces to be treated include concrete, metals, buildings (exterior and interior), ventilation systems, roads, sidewalks, topsoil, and plants. The equipment should address a range of scales from small rooms to large areas such as roads or building exteriors. The method should not destroy the underlying surfaces.

**R1091 Radiological Decontamination Technologies for Post-event Restoration**

Develop and test materials, equipment and procedures to rapidly and efficiently remove radioactive surface contaminants resulting from the activation of a radiological dispersion device. The methods will be used to reduce the radioactive contamination to a point where the target could be rapidly returned to productive use. As a minimum the method will reduce the risk from airborne radioactivity and the residual whole body radiation in the treated area to below federal and state limits. Surfaces to be decontaminated include concrete, metals, buildings (exterior and interior), ventilation systems, roads, sidewalks, topsoil, and plants. Different approaches may be needed for different surfaces. Radioactive material, possibly as small as micron-sized, will need to be removed from cracks in the surfaces, as well as from the surfaces themselves. The technology should be simple to use, environmentally benign to use and pose minimal health risks. Waste generation should be minimized and final disposition of the material should minimize long-term environmental consequences. Partial approaches that address a significant part of the problem, either as to surface or as to type of radioactive contaminant, will be considered.

**R891 Rapid Field Identification of Agricultural Bioterrorism Agents**

Develop and test a system for the rapid field detection and identification of animal and plant pathogens at ports of entry, in production agriculture, and natural resource environments. The technology must process samples collected from swabs taken from plant/animal material or inanimate surfaces, the fluids or tissues of plant/animal material, air, and water. Detection and technology must be completed in 30 minutes (desired) to less than one hour (required). Technical approaches may be based on DNA/RNA, antibody, protein, complex carbohydrate or other chemical analyses. It must communicate results to a computer at a central program management location. The technology must be rugged to withstand transportation. It must be suitable for use in remote locations, small (14"x24"x9"), self-contained power, or run off of an external battery. Supplies and reagents used in the tests must be designed for easy use in the field. The technology must be simple to use by individuals with minimal laboratory training (1 day course). Specific plant pathogens, in priority order, are: Soybean Rust\*, Downy Mildew of Corn\*, strains of Sharka\*, Citrus Greening Bacterium, Citrus Canker\*, Potato Wart, Sudden Oak Death Fungus\*, Apple Proliferation\*, Bacterial Wilt\* and European Brown Rot\*. Animal pathogens of greatest concern (ranked) include Foot and Mouth Disease\*, Rinderpest\*, Rift Valley Fever, Classical Swine Fever\*, Highly Pathogenic Avian Influenza, Contagious Bovine Pleuropneumonia, Vesicular Stomatitis\*, Swine Vesicular Disease, Newcastle Disease, and African Swine Fever. An asterisk (\*) indicates that Suitable probes and antibodies may be available for incorporation into the test system.

**5.2. Explosives Detection (ED) Mission Area/Subgroup**

The Explosives Detection (ED) Subgroup is responsible to identify, prioritize and execute research and development projects that satisfy interagency requirements for existing and emerging technology in the area of explosives detection and diagnostics. Emphasis is on long term sustained approach to develop technologies for detection and subsequent characterization of concealed explosives.

**R1067 Remote Detection of Large Vehicle Bombs**

Develop systems capable of remote detection of explosives concealed in cars and trucks. Remote detection as presented in this requirement refers to distance between operator and detection system.

Non-intrusive approaches are strongly desired. Technical solutions involving isotopic nuclear radiation sources will not be considered. Short-term performance goals are: 80 percent detection with less than 10 percent nuisance alarm rates for quantities of 100 kilograms (kgs) explosives in cars and 400 kgs of explosives in trucks, throughputs of 12 (required) or 60 (desired) cars and 6 (required) or 20 (desired) trucks per hour respectively, and a remote capability is desired but not essential. Long-term performance goals are: 90 percent detection (required) and with less than 1 percent nuisance alarm rates (required) and 0.1 percent (desired) for quantities of 25 kg explosives in cars and 100 kgs of explosives in trucks, throughputs of 50 cars and 24 trucks per hour respectively, and a remote detection capability out to 400 meters. Remote capability can employ either wired and/or wireless techniques. Candidate technical solutions need to have minimal impact on manpower requirements with respect to physical security and force protection

operations. Deployed system size should not result in significant alterations to existing infrastructure and grounds.

**R1068 Deployed Screening Equipment Optimization**

Develop technologies to augment and/or modify existing explosive detection and x-ray screening systems to reduce manpower requirements at security screening checkpoints. Technical solutions may address different facets of the security screening process. Potential enhancements for currently deployed trace detection technology can include but not be limited to improvements in sample acquisition, analysis, processing times, system cleanup, and equipment automation. Potential enhancements for currently deployed x-ray imaging systems can address areas such as hardware/software improvements leading to better/faster image acquisition, resolution and threat detection. Potential enhancements to bulk detection systems can address areas such as alarm resolution and throughput. Potential technical solutions should be affordable relative to the security application that will be augmented/enhanced.

**5.3. Improvised Device Defeat (IDD) Mission Area/Subgroup**

The Improvised Device Defeat (IDD) Subgroup is responsible for prioritizing and addressing the technological requirements of the military, federal, state, and local bomb technician community for increased capabilities in diagnostics and defeat technologies to more safely and effectively render terrorist explosive devices safe. Particular emphasis is placed on technologies that safely diagnose and defeat terrorist improvised explosive devices (IEDs), improvised chemical and biological devices, and large vehicle bombs (LVBs).

**R1094 Integrated Spatial Recognition**

Integrated Spatial Recognition, Tracking, Health Monitoring and Alerting System. Develop the components for and/or an integrated wearable emergency responder system with the following capabilities and options:

Required Capabilities:

1. Determine real time three-dimensional positional location information within structures;
2. Determine location/position of sources of high heat and combustion sources;
3. Determining surrounding hazardous atmospheric composition;
4. Monitoring physiology of the emergency responder to include heart rate, core temperature, and other indicators of health status;
5. Receiving an audible alert signal or minimal printed warning or other information on helmet-mounted visual display;
6. Integrating the above data into a visual display within an emergency responder protective mask. Hand held displays are not desirable. Controls for visual display must be simple and operable while the responder is in Personal Protective Equipment;
7. Transmitting data from 1-6 above through buildings, structures, and/or rubble to an incident command vehicle or station outside, without the use of repeaters inside the structure or reliance on existing emergency communications systems; and
8. Fusing data and providing for an operationally suitable, decision support presentation, compatible with existing operating systems on a PC/laptop monitor for the incident commander.

Optional Capabilities:

1. Obtaining and updating real time spatial information within a visually obscured environment; and
  2. Distinction of casualties from inanimate objects in a visually obscured environment.
- Standardized, non-proprietary component interfaces should be proposed to take advantage of optional sources for components.

**5.4. Infrastructure Protection (IP) Mission Area/Subgroup**

The Infrastructure Protection (IP) Subgroup identifies and pursues user requirements for the protection and assurance of critical Government, public, and private infrastructure systems required to maintain the national and economic security of the United States.

**R1054 Secure Video Teleconferencing and Document Transfer**

Develop and demonstrate an encrypted video teleconferencing system. The system must be capable of encrypted video, image, and document sharing with a minimum of 10 participating locations. The desired capability is 30 participating locations. The system shall provide secure communications over the PSTN using existing POTS lines. The system shall provide automatic adjustment for poor quality lines. The system must be capable of FIPS 140-2 certification. All bridge, hub, and/or routers shall be located in a host government facility. The system shall use the NIST Advanced Encryption Standard. The system shall include a document camera with associated software for real-time document/image capture and transmission as well as be capable of transmitting electronic presentation material. The system shall provide anti-theft/anti-spoofing capabilities; protection against man-in-the-middle attacks; and automatic key management. The system shall provide intelligibility equal to TV quality video.

**R1082 Evaluation Test Beds for Information Discovery and Analysis Systems**

Information fusion promises to play a central role in countering future terrorist efforts through discovery of key indicators. While policy issues are under review to ensure individual rights to privacy are protected as these capabilities are developed, significant technical issues remain in making such systems viable, particularly as relate to performance, scalability and effectiveness. In certain cases, information from many sources will have to be acquired, integrated, and appropriately interpreted to support decision makers (ranging from emergency-response units to intelligence organizations). Given the range of formats, the permanence, and growing volume of information from each source, and the difficulty of accurately analyzing information from single sources, let alone multiple sources, information fusion as a practical aid to threat analysts offers researchers a challenge. Several criteria will ultimately determine the efficacy of these systems. A difficulty in measuring effectiveness and performance is the lack of a suitable test bed or evaluation framework for comparing information discovery and analysis systems. This is due in part to the wide range of approaches and applications. However, certain common elements have emerged: scalability, performance, a focus on links between information in both managing the information and discovering indicators of activity, information discovery through statistical methods, visualization techniques, accuracy of semantic extraction from unstructured sources, and others. In addition to discovering information, the analysis algorithms must be able to relate that information to potential terrorist threat scenarios.

Develop a methodology for the test and evaluation of information discovery and analysis systems. The effort requires researching this emerging technology, identifying its core functionality, and establishing parameters for the validation of new systems using information fusion through the test and evaluation process. For the purpose of this effort, information fusion shall be defined as the use of computer technology to acquire data from many sources, integrate the data into usable and accessible forms, and interpret them. The methodology must address the following functions as well as any others discovered during the research phase.

- Scalability - The system must scale to handle a massive number of linked facts from a large number of diverse sources.
- New facts from the underlying information systems must be made immediately available to the analyst.
- Automatic discovery of relationships among facts reported by different information systems.
- Multiple underlying information systems, from different information domains are available for automatic discovery of relationships. The system must address structured text (such as tables and system logs), unstructured text (documents), geographic features (maps, for example), time-series data (such as financial histories), video surveillance, and other kinds of data with reasonably high quality of performance.
- Effectiveness of discovery algorithms and tools in relation to information retrieval and precision.
- Effectiveness of analysis algorithms in relating discovered information (data and relationships) to potential, plausible terrorist threat scenarios.

Responders should indicate their experience in the field and concepts for solution. The ability to create a test and evaluation methodology that can accommodate multiple types of information storage techniques and algorithmic approaches will be an important consideration.

**R1084 Confidence Level Capability within Semantic Graphs**

Develop a system that assesses the confidence level within semantic graphs. This system must incorporate algorithms to determine conclusions supported by the preponderance of the information and to define a level of confidence to be placed in those conclusions. This system must be able to highlight the pedigree or source of the data and what level of confidence can be placed in that conclusion as well as any conclusions drawn from associated links within the graph. Algorithms must also be able to generate a confidence level in a chain of links based upon the confidence level of each component link and node. Create a capability that allows the system to evaluate a semantic graph for which data is consistent with other information and present the user with all the possibilities as well as with the most consistent information. For example, this includes the ability to deal with many individuals with the name Joe Brown and heuristics to determine when Joe Brown and Joseph E. Brown are most likely to be the same person. Since much of the data in the system comes from fallible sources, it is likely that some of it is not correct. Confidence levels of each piece of data must be generated on input based upon the source of the information and the type of data.

**R1085 Conflicting Data and Data Pedigree within Semantic Graphs**

Create a capability that allows the system to evaluate a semantic graph for which data is consistent with other information and present the user with all the possibilities as well as with the most consistent information. This includes the ability to deal with many individuals with the name Joe Brown and heuristics to determine when Joe Brown and Joseph E. Brown are most likely to be the same person. This is similar to the activity in the watch and warning area but as it relates to relationships. Since much of the data in the system comes from fallible sources, it is likely that some of it is not correct and much of it may be ambiguous. This system must be able to highlight what the preponderance of the information indicates and highlight the pedigree or source of the data and what level of confidence can be placed in that conclusion. This is interdependent with the ability to deal with conflicting data. It must be easy to query the system and understand how the conclusion was reached.

**R1086 Statistical Data Mining of Network Traffic**

Other than byte patterns known to denote a particular intrusion, there are few ways of recognizing suspicious network traffic that is intended to perform reconnaissance of a network or that may execute intrusions. It appears that statistical data mining methods can be used to identify some suspicious activity. Statistical data mining is the process of discovering meaningful new correlations, patterns and trends by sifting through large amounts of data stored in repositories, using pattern recognition technologies as well as statistical and mathematical techniques. Since this large volume of data cannot be saved indefinitely the first task of this analysis is to decide which information should be saved for further analysis. The challenge in cyber security is the enormous volume of network traffic data and the difficulty of knowing what parameters to search.

Develop algorithms to identify multi-step vulnerability patterns in a network description map. Define events that may be stepping stones relevant to an intrusion or one component of suspicious traffic. Develop data mining algorithms to identify anomalous patterns in network traffic. Provide a systematic ability to store data that is of interest. Provide a capability to parse data and extract information in order to determine the type of attack, origin, rate of attack, and potential vulnerability to be exploited.

**R1087 Modeling of Computer Networks**

In order to better understand network behavior and to ultimately be able to predict the behavior resulting from major changes to the network. Develop a high level model of the internet that allows for the simulation of internet activity and the propagation of network traffic in order to assess the interdependency of physical and cyber assets that constitute the critical infrastructure. This model must be able to simulate the behavior of cyberspace to develop an understanding of the interdependencies that lead to vulnerabilities as well as those attributes that lead to robustness. From this model, conduct a study analogous to Shannon's information theory to provide a theoretical foundation and metrics for cyberspace.

**5.5. Investigative Support and Forensic (IS) Mission/Area Subgroup**

The Investigative Support and Forensics Subgroup is responsible for identifying and developing user requirements and associated technologies, equipment and solutions that improve current or provide new (a) forensic capabilities for analyzing terrorist-related evidence and (b) technology for supporting terrorist-related investigations.

**R000-IS Unspecified Requirement - Investigative Support and Forensics**

New or improved technologies or emerging technological capabilities pertaining to Investigative Support and Forensics that may be of interest to the TSWG, but were not specifically requested in this BAA and are not commercially available. Future interests may include 3D interactive visualization of forensic data; clandestine law enforcement surveillance systems; 3D photogrammetry for terrorism event reconstruction; computer steganalysis; and, robotic forensic hot zone platforms.

**R1056 Age Determination of Biological Evidence**

Design and develop a forensic method to determine the specimen age of recovered biological evidence. The method must build on the existing knowledge of blood, tissue, other biological fluids and the measurable rate of RNA breakdown. The method must include a technique that can determine the specimen age of blood and other tissues found on various surfaces at terrorist scenes. The method shall address and determine the following: 1) the rate of degradation of RNA extracted from blood and other biological tissue maintained at room temperature over an extended period, 2) how the rate of degradation of RNA varies due to temperature and other environmental factors (humidity, air flow, amount deposited, etc.), 3) the rate of degradation of RNA recovered from blood and other tissues of various population sources, 4) the rate of degradation of RNA from other biological tissues or fluids besides blood such as saliva and semen, 5) how the rate of degradation of RNA from blood/tissue varies due to the surface upon which the blood is deposited, 6) how common microbes and other contaminants may affect the degradation of RNA in blood, and 7) the minimum amount needed to assess the age of a sample.

The deliverables will include a comprehensive report of the biological properties that were examined and provide detailed descriptions of the testing methods and an analytical evaluation of test results including comprehensive data about error rates. The final report must contain all raw data, copies of any software programs developed to conduct analyses, and copies of computer files of all work used to prepare the report.

Any methods and procedures must be scientifically validated to adhere to the evidentiary standards of *Daubert v. Merrell Dow Pharmaceuticals Inc.*, 509 U.S. 579 (1993), 43 F3d 1311 (9th Circuit, 1995), and the Federal Rules of Evidence.

**R1058 Hyperspectral Imaging System for Forensic Examination**

Develop a hyperspectral imaging system that has a broad spectral range (prefer from 0.25 to 3 micrometer wavelength; accept from 0.35 to 2 micrometers) and is capable of generating and analyzing hypercubes associated with reflectance, fluorescence, and Raman measurements. This system will be used for non-destructively characterizing and identifying evidence and for extracting weakly contrasting features on surfaces. It will also be used for the hyperspectral characterization of thin layer chromatographic plates. Evidence subject to such examination include surfaces contaminated with chemical or biological agents or with explosive residue; fingerprints on porous and non-porous surfaces; writing and printing inks on documents; and stains, fibers, cloth, and drugs.

The system must include the following: 1) full interoperability with the Automated Fingerprint Information System (AFIS), 2) a 1024 x 1024 cooled charge-coupled device (CCD), 3) 16:1 zoom optics, 4) software capable of multivariate statistical analysis and subtraction of background interference (e.g., fluorescence), and 5) ability to collect data rapidly (less than 5 minutes preferred).

Any methods and procedures must be scientifically validated to adhere to the evidentiary standards of *Daubert v. Merrill Dow Pharmaceuticals Inc.*, 509 U.S. 576 (1993), 43 F3d 1311 (9th Circuit, 1995), and the Federal Rules of Evidence.

**R1059 Cockpit Voice Recorder Transcription and Timing Tool**

Design and develop an automatic word recognition and transcription tool for recorded audio information. The tool must perform with reasonable accuracy without prior training and under conditions of adverse signal-to-noise ratios. The tool must generate a timed transcript of recorded cockpit conversations and correlate spoken phrases and identifiable sounds on this transcript with events simultaneously recorded on the Flight Data Recorder (FDR) and with related external data.

The transcription tool shall use a graphical user interface (GUI) capable of creating, saving, reading, playing, displaying, and manipulating standard wave data (computer) files in real time. The transcription tool must incorporate simultaneously playing and displaying multiple wave files sampled at arbitrary data rates.

The tool shall operate on standard Windows platforms using commonly encountered audio and video expansion cards. The display must provide both time-domain and frequency-domain displays of the audio waveform in real time and across multiple monitors. The GUI shall use a real time waveform display with a moving cursor denoting the current position within the audio waveform. The GUI display must use integrated text boxes to display portions of the audio transcript keyed to the appropriate region of the waveform display. The tool shall be capable of reading and generating common externally derived standard industry timing formats such as those outlined by the Inter-range Instrumentation Group (IRIG) and reading the final transcript for display and editing using the original GUI display to enable modification and correction. The final timed transcript must be exportable to a format that can be opened, formatted, and edited using standard word processing and/or database software.

The tool shall be designed so that in the future the following can be included: the ability to adjust the relative displacement and rate (pitch-corrected) of individual recordings to facilitate transcript synchronization and to extend the transcription tool with capabilities such as signal processing functions including re-sampling, variable pitch-corrected rate changing, broadband and narrowband noise filtering, FFT-filtering, spectral analysis; automatic transcript timing (marking begin/end times of spoken phrases, microphone on-key/off-key events, etc.); recognition and annotation of cockpit-specific sounds; voice recognition; and support for multiple languages.

**R1062 Long Range Non-Line-Of-Sight Wireless Video Transmission System**

Design and develop a clandestine wireless video transmitting system capable of non-linear, real-time transmission with a minimum five-mile range in an urban, severe static, high interference, and dynamic multi-path environment. This system must transmit and receive Coded Orthogonal Frequency Division Multiplexing (COFDM) video signals and fully operate with commonly used law enforcement clandestine video cameras with high reliability and producing identifiable, reproducible recordings on standard video recording media. Audio signal capability must be embedded in the transmission system. The system must be capable of transmission in densely urban stationary, mobile (including moving vehicles), and airborne scenarios.

The power consumption cannot restrict the clandestine usage of the system, and be configured dually for standard 110 ac outlets and commercially available batteries or a rechargeable power pack. The system must be configured for both a separate clandestine transmitting and clandestine receiving site. The system's durability and ruggedness must ensure continual, 24 hour, long-term operation indoors and outdoors in all weather conditions.

Any technology and methods must be scientifically validated in conformance to evidentiary standards per *Daubert v. Merrell Dow Pharmaceuticals Inc.*, 509 U.S. 579 (1993), 43 F3d 1311 (9th Circuit, 1994), and the applicable Federal Rules of Evidence. The deliverable prototype must be interoperable with existing surveillance law enforcement technology, methods, and procedures.

**R1088 Real Time Remote Detection of Threat**

Develop and design a standoff measurement system that can unobtrusively gather physiological and/or behavioral data in real-time and characterize the level of potential threat based on the recorded measures. System should be portable and have a simple human interface for rapid assessment.

Parameters to be fully investigated may include, but not be limited to, facial thermal imaging, voice signal processing, electro cardiac activity, pulse transit time, blood pressure, respiration, visual activity, skin conductance, electroencephalography, electromyography, cortical and subcortical brain activity, and body

chemical emissions. System should be able to recognize, interpret and discriminate between high levels of unrelated stress and level of potential threat. System should also be able to recognize deliberate attempts to countermeasure the device through artifact recognition. The system must be able to develop data in a format that can be integrated into established baseline information for use in analysis.

Testing should assess the effects of cultural, language, and content on ability to discriminate threat from anxiety/stress. Results of testing must include statements as to the test-retest reliability within individuals, discriminative validity, and operational validity under field-like conditions. (Note: This requirement is NOT simply to demonstrate a capability to detect human presence, but rather to non-intrusively observe and interpret human physiological signs in the context of intent to pose threat.)

**R549 Data Recovery from Damaged or Erased Advanced Storage Media**

Design and develop recovery tools for personal computer systems that identify, collect, preserve, and recover data and evidence from advanced storage media, such as compact disks, zip disks, floppy disks, DVDs, and other storage media that may have been intentionally damaged, erased, or deleted through overwriting of media to prevent its future use.

The software and hardware must work on all commonly used personal computer hardware and software systems since 1993. The recovery tools must recover erased or overwritten data at or near the same speed of the advanced storage media hardware (e.g. magnetic hard drive, CD reader, or other device). This effort shall not address recovery of data from advanced storage media that has been degaussed. The deliverables must include a final report, methods, procedures, technical specifications and other research data, and a fully functional software and hardware prototype. Any hardware must be reasonably portable without additional weight-handling equipment.

Any methods and procedures must be scientifically validated in conformance to the evidentiary standards per *Daubert v. Merrell Dow Pharmaceuticals Inc.*, 509 U.S. 579 (1993), 43 F3d 1311 (9th Circuit, 1995), and the Federal Rules of Evidence.

**5.6. Personnel Protection (PP) Mission Area/Subgroup**

The Personnel Protection (PP) Subgroup is responsible to identify, prioritize, and execute research and development projects that satisfy interagency requirements for unique equipment and systems to alert and prevent attacks on VIP protectees. This includes hardware and tools that provide security to both the VIPs and their protectors. Inherent in this development is additional emphasis on life safety and emergency response equipment.

**R1039 MANPADS Countermeasures**

Develop technologies that will support the defeat of Man Portable Air Defense Systems (MANPADS) targeted against commercial and private aircraft during take-off and landing operations. Systems must be practical in terms of the degree and cost of modification of commercial aircraft, and requisite operations and support costs and infrastructure. Included in this requirement are means to warn both ground operations and aircraft of potential MANPADS activity. Recommendations for aircraft systems must consider the impact on aircraft safety and performance. Systems must also consider the impact of collateral effects to areas surrounding commercial airports.

**5.7. Physical Security (PS) Mission Area/Subgroup**

The Physical Security (PS) Subgroup is responsible to identify, prioritize and execute research and development projects that satisfy interagency requirements for physical security support to protect personnel, equipment and facilities against terrorist activity.

**R1009 National Rail System Passenger/Baggage Screening**

Integrate and adapt existing technology and methods to devise a weapons and explosives detection capability for National Rail Systems equivalent to or better than existing airport checkpoint screening. The system should have a through-put rate of at least 200 passengers/hour and a cost (fixed and recurring) per passenger of less than \$1.00 for a commuter and/or transit rail venue. Evaluate, integrate and then

demonstrate the prototype system constructed from applicable existing technologies in an operational train station. This test demonstration has the primary objective of illustrating the effectiveness of existing technologies for the screening of rail passengers and baggage for unauthorized contraband, but should also demonstrate the cost-effectiveness of such a screening system in performing its intended function without significant costs or other impacts, such as unnecessary delays of the traveling public. Where test results show that commercially available equipment falls short of meeting customer agency(s) requirements for an integrated screening system in this transportation venue, the performer is to provide a clear definition of those shortfalls along with recommendations for modifications of existing technologies and/or requirements for further technology development to meet user agency requirements.

Proposed technologies must accurately (high probability of detection) and effectively (low nuisance/false alarm rates) screen for explosives and improvised explosive devices. These technologies must be non-intrusive and non-invasive. They must function within limits of the energy exposure levels to humans. Proposed technologies must provide an automatic detection alert to an operator and must have a high throughput rate. Portable, fixed site (portal), mobile (vehicle mounted), and hand-held systems are of interest. System integration should include operator training.

Technologies must address the open operational environment, including many stops along a designated train route. Stations and trains differ greatly from airports and airplanes that offer confined and controllable spaces. Technologies must be carefully designed to have minimum impact on the efficiency of rail operations and passenger flow. Consideration must be given to identifying appropriate systems that are both cost-effective and efficient. Technologies must fit well into the physical infrastructure of train stations. Smaller systems are encouraged due to limited operational space.

#### **R1010 Sea Mine Detection System**

This announcement seeks development of a system that will give a rapid and efficient capability for ensuring that U.S. seaport harbors, channel approaches and navigable rivers are in fact clear of any underwater mine threats and provides this information in a format that will populate a central over-arching database for use by all agencies currently using similar systems. This system would provide for a standardized output that would be integrated on a national scale for homeland defense. Existing technology and databases are localized, fragmented and not interoperable. The envisioned product would provide for data that could be used by U.S. Navy, U.S. Coast Guard and U.S. Army Corps of Engineers for developing baseline profile data on current harbor, channel and waterway conditions. The developed system would then be used to survey these bodies of water for changes from the baseline to determine if mines or other threat objects have been emplaced in the waterway. A prototype development and demonstration of the system in a seaport, selected by the US government, is also required.

The commercial mine detection system, used as part of this integrated national system, should have the sonar capability to scan the underwater bottom of the subject body of water with beam steering and focusing techniques that would provide a high-resolution image. The desired range of the sonar is approximately 150 meters for each side of the scanning vessel for a total of 300 meters minimum. The mine detection system might comprise a towed array that would account for pitch/roll stabilization, with towing speeds of up to 12 knots.

Collected data must be saved/archived to a Geographic Information System (GIS) type database at a central processing station. The data must be able to be displayed in a wide variety of processor formats for authorized users. The concept of operations for the national underwater mine detection system would involve developing a baseline of existing harbor bottom and waterway conditions, archiving the information, and then re-surveying the same areas at selected intervals. The information from each port and waterway must be then linked to a national level database. The system must be capable of identifying anomalies/changes to the baseline survey that might require further investigation and threat neutralization.

#### **R1011 Underwater Loudhailer**

This announcement seeks a design for an underwater loudhailer that will meet the performance characteristics for effective one-way communication with a potentially hostile underwater swimmer. Further, a prototype deployment of at least one of the design concepts is required to demonstrate that the performance is as stated.

The requirement is for a device to notify an underwater swimmer(s) of a security area violation prior to the use of force. The design may be for an underwater loudhailer (e.g., a diver recall type device) or other such device that meets the requirements. It must transmit, or otherwise communicate, clear and proven intelligible commands automatically and continuously in English, to an underwater swimmer at a minimum distance of 100 to 200 yds. or greater (desired: 500 yds.) from a protected asset, or from a security-zone patrol vessel, to a minimum water depth of 130 ft. The system must have the capability to easily add languages other than English and will be equipped with a microphone for use by security forces. The system must be one person transportable, or portable, and easy to operate. It should be ruggedized for operating in harsh salt water and shock environments, waterproof to at least 30 feet underwater and when closed up on the surface, and at least splash-proof when open and connected for operation. The system should include a waterproof cable that is at least 50 ft long, to connect the control box and transducer. Unit must have an internal battery that will power the system for at least two hours, and is rechargeable using standard 115 VAC. Otherwise, the system may be 12V DC powered, and must be able to connect to and operate on a vessel or vehicle power. It must be deployable from shore (dock or pier) or from a small boat. If not omni-directional, the operator must be able to determine the principal direction(s) of sound transmission as a means to aim the device when deployed. The device should have the ability to generate and broadcast a control tone and live voice commands. It should also be able to store and playback up to five (5) specific commands or announcements, up to one minute long, in five different languages (prerecorded). The unit should not be harmful to any living aquatic species, and the need for an environmental impact study should be addressed in light of the proposed sound pressure levels or other environmental considerations.

**R1024 Breach Control Barriers for Public Access Areas**

This announcement seeks a design or suite of designs for the safe and rapid deployment of security breach control barriers at the entrances to or inside indoor public areas. Further, a prototype deployment of at least one of the design concepts is required. The requirements for the breach control barriers are: (1) rapid deployment, (2) consistent with public safety considerations, (3) compliance with fire and safety codes, (4) operational throughput, (5) aesthetics and (6) reasonable cost.

There are a myriad of different physical configurations of the area “downstream” of a facility checkpoint, ranging from open atrium to narrow corridors (with or without doors or other barriers). The designs should address a range of such physical arrangements if practical. The distance between the screening point and the barrier, along with the time delay in commanding the barrier deployment, will be site specific and will dictate the absolute closure time. The more rapid the closure time, the more likely that the design will be suitable for multiple security checkpoint environments. A desired deployment time should be less than 2 seconds with a maximum-allowable requirement of 4 seconds.

Since the barriers will be used in a public place, the design must be very conscious of human safety, especially during the time of activation. Safety features may be built into the barrier device as well as other means for alerting and directing individuals to avoid any safety hazard. As in all public area barriers, the system must be able to satisfy national and local fire codes and ordinances, and must be fail safe (with system failure annunciation to alert security staff of the condition).

Careful consideration must be given to the possible impact on checkpoint throughput due to the presence of the device at an entry point when it is not deployed as an active barrier. For high traffic situations (such as major airports and other transportation facilities) significant throughput reduction will not be operationally acceptable. Aesthetics plays a significant role in the acceptability of security devices which are highly visible to the public. Cost, though last on this list of requirements, is significant. Cost considerations must include installation, maintenance, staffing (if any) and any other life cycle costs specific to the device.

These barriers could have applicability in public transportation (air, sea, rail, bus), courthouses, embassies, Federal offices serving the public, laboratories and any high security government facility allowing public or visitor access.

**R1037 Secure Authenticated Mobile Awareness System**

Current terrorist threat-data assimilation, warehousing, analysis and communication systems are not currently effective in collecting a complete spectrum of relevant adversary threat information from multiple

sources, protecting it, and transmitting it securely to actionable security/response choke points (e.g., security screening locations), in a timely fashion, for use by security or law enforcement personnel in responding to the positive identification of a potential terrorist (e.g., for use by security personnel in conducting additional, enhanced screening and/or apprehension of a potential terrorist who is attempting to pass through a security check point).

This announcement seeks development of a cost-effective, secure, adversary threat data assimilation and awareness system that will (a) employ current and emerging technologies to collect key information (such as the identification of the potential terrorist, as well as other personnel, vehicles, baggage, or cargo associated with his/her name) throughout a facility or area of interest, and across several adversary threat databases; (b) employ authentication and encryption to protect that information; and (c) broadcast actionable information to security personnel or responders at key security choke points. This system must also provide for (d) the communication of subsequent actions and screening results by security personnel at the alerted security choke point back to other actionable response elements of the U.S. counterterrorism/law enforcement community.

Other desired deliverables for a complete prototype system might include software and hardware systems that will: (a) interface to a variety of new and existing (legacy) security sub-systems such as biometric scanners, secure area alarm systems, radio frequency identification (RFID) tags, barcode readers, etc., in order to process disparate security messages into informative, actionable information; (b) provide the ability to evaluate sensor information, and engage other security systems in tracking potentially harmful events; (c) operate largely autonomously, with only a minimal need for human intervention in the event of a crisis or emergency; (d) be highly fault-tolerant with regard to hardware and software failures and be capable of self-diagnosis; and (e) provide the necessary intelligence to filter and process sensor input to reduce "false positives", and provide security personnel with precise situational information.

#### **R1047 Improved Mass Transit Surveillance and Early Warning System**

Integrate both video motion detection and an ability to detect anomalous individual/crowd behavior into the existing mass-transit surveillance infrastructure for detection of terrorist attacks on mass transit systems. The system must process multiple video streams at one time and function with, or be easily modified to function with, existing mass-transit surveillance infrastructure. The system must alert the operator to "abnormal" behavior patterns in order to initiate timely evacuations and alert first responders. The system must be able to detect unusual activity in train tunnels and other transit choke points. Additional desired performance parameters are the capability to: (a) Set virtual perimeters on a video image; (b) Track and identify deviations from normal traffic patterns (c) Locate and identify any items left behind by personnel; (d) Simultaneously track multiple personnel and vehicle targets in high traffic areas; (e) Track single/multiple personnel and vehicle targets at entry points; (f) Detect and differentiate between different types of potential threat objects and group object behaviors; (g) Detect the quantity of objects as a single object and as object groups; (h) Track position, direction, and speed of a specific or group object(s).

The types of behaviors to be monitored and detected are: specific types, exception to the baseline scene, relationships between objects in scene, and an ability to identify trends in the area of detection. The system shall require minimal human intervention and detect an identified activity and cause for a specified event in a timely manner. The system shall have the capability to store, archive, and index recorded activities and alarms for easy recall. Detection shall function under different lighting levels and changing light conditions.

**ATTACHMENT A – ACRONYMS AND ABBREVIATIONS**

|          |   |       |   |
|----------|---|-------|---|
| 3D       | Three Dimensional   | GIS   | Geographic Information System   |
| AC       | Alternating Current   | GUI   | Graphical User Interface  |
| ADL      | Advanced Distributed Learning   | He    | Helium  |
| AFIS     | Automated Fingerprint Information System  | HVAC  | Heating Ventilation and Air Conditioning  |
| ANSI     | American National Standards Institute   | FAQ   | Frequently Asked Question   |
| BAA      | Broad Agency Announcement   | FAR   | Federal Acquisition Regulation  |
| BIDS     | BAA Information Delivery System   | FCCM  | Facilities Capital Cost Of Money  |
| CAD      | Computer Aided Drawing  | FDA   | Food and Drug Administration  |
| CASB-CMF | Cost Accounting Standards (CAS) Board - Cost of Money Factors   | FFT   | Fast Fourier Transform  |
| CB       | Chemical, Biological, Radiological and Nuclear Counter Measures (Also CBRNC or CBRN or CBR) (mission area/subgroup designation) | FOIA  | Freedom of Information Act  |
| CCD      | Charge-coupled Device   | FORAX | Fiber Optic Remote Amplifier Extension  |
| CCR      | Central Contractor Registration   | FP    | Full Proposal   |
| CD       | Compact Disk  | fps   | Feet per second   |
| CDC      | Center for Disease Control  | ft    | Feet  |
| CFR      | Code of Federal Regulations   | FY    | Fiscal Year   |
| COFDM    | Coded Orthogonal Frequency Division Multiplexing  | G/T   | Gain to Noise   |
| CPFF     | Cost Plus Fixed Fee   | GFI   | Government Furnished Information  |
| CTTSO    | Combating Terrorism Technology Support Office   | GFM   | Government Furnished Material   |
| DC       | Direct Current  | GIF   | Graphics Interchange Format   |
| DFARS    | Defense Federal Acquisition Regulation Supplement   | GPS   | Global Positioning System   |
| DHS      | Department of Homeland Security   | HBCU  | Historically Black Colleges, Universities   |
| DPI      | Dots per inch   | Hz    | Hertz   |
| DUNS     | Data Universal Numbering System   | IDD   | Improvised Device Defeat (mission area/subgroup designation)                      |
| ED       | Explosives Detection (mission area/subgroup designation)  | IDHL  | Immediately Dangerous to Life or Health   |
| EDT      | Eastern Daylight Time   | IED   | Improvised Explosive Device   |
| EOD      | Explosive Ordnance Disposal   | IP    | Infrastructure Protection (mission area/subgroup designation)                     |
| EPA      | Environmental Protection Agency   | IRIG  | Inter-Range Instrumentation Group   |
| ERPG     | Emergency Response Planning Guidelines  | IS    | Investigative Support and Forensics (Also IS) (mission area/subgroup designation) |
| EST      | Eastern Standard Time   | JPEG  | Joint Photographic Experts Group  |
| ET-SCBA  | Expedient Tactical Self Contained Breathing Apparatus   | K     | Thousand  |
| FDR      | Flight Data Recorder  | KB    | Kilobyte  |
|          |   | Kg    | Kilograms   |
|          |   | Lbs   | Pounds  |
|          |   | LOS   | Line of Sight   |
|          |   | LVB   | Large Vehicle Bomb  |

## TSWG DAAD05-03-T-0024 DHS BAA Package

5/14/03

|          |   |      |   |
|----------|---|------|---|
| MANPADS  | Man Portable Air Defense System                                       | TOS  | Tactical Operations Support (mission area/subgroup designation) |
| MB       | Megabyte  |      |   |
| MHz      | Mega-Hertz  | TSWG | Technical Support Working Group                                 |
| MI       | Minority Institutions   |      |   |
| mm       | millimeter  | UAV  | Unmanned Air Vehicle  |
| NAICS    | North American Industry Classification System                         | USB  | Universal Serial Bus  |
| NFPA     | National Fire Protection Association                                  | USC  | United States Code  |
|          |   | v    | Versus  |
| NGEODRCV | Next Generation Explosive Ordnance Disposal Remote Controlled Vehicle | VAC  | Volts AC (alternating current)                                  |
|          |   | VIP  | Very Important Person   |
|          |   | WP   | White Paper   |
|          |   | XML  | Extensible Markup Language                                      |
| NIST     | National Institute of Standards                                       |      |   |
| OS       | Operating System  |      |   |
| PDF      | Portable Data file  |      |   |
| PL       | Public Law  |      |   |
| POTS     | Plain Old Telephone Service   |      |   |
| PP       | Personnel Protection (mission area/subgroup designation)              |      |   |
| PS       | Physical Security (mission area/subgroup designation)                 |      |   |
| PSTN     | Public Switched Telephone Network                                     |      |   |
| PSYOPS   | Psychological Operations  |      |   |
| QC       | Quad Chart  |      |   |
| OSHA     | Occupational Safety and Hazard Association                            |      |   |
| R&D      | Research and Development  |      |   |
| Rad      | Radians   |      |   |
| RAM      | Random Access Memory  |      |   |
| RAMP     | Remote Multi-band Amplifier   |      |   |
| RCV      | Remote Controlled Vehicle   |      |   |
| RH       | Relative Humidity   |      |   |
| RF       | Radio Frequency   |      |   |
| RFID     | Radio Frequency Identification  |      |   |
| RT       | Receiver/Transmitters   |      |   |
| SBA      | Small Business Administration   |      |   |
| SC       | Surveillance Collection and Operations Support (Also SCOS)            |      |   |
| SCBA     | Self-Contained Breathing Apparatus                                    |      |   |
| SCORM    | Shareable Content Object Reference Model                              |      |   |
| SDB      | Small Disadvantaged Business  |      |   |
| SF       | Standard Form   |      |   |
| SOW      | Statement of Work   |      |   |
| SNM      | Special Nuclear Material  |      |   |
| SVGA     | Super Video Graphics Array  |      |   |
| TIC      | Toxic Industrial Chemical   |      |   |
| TIM      | Toxic Industrial Material   |      |   |